"Western Treasure -- Deep, Wet Snow"

FEDERAL-STATE COOPERATIVE SNOW SURVEYS AND IRRIGATION WATER FORECASTS

for

ARIZONA

FEBRUARY 15, 1948

By
Division of Irrigation, Soil Conservation Service
United States Department of Agriculture

Data included in this report were obtained by the agency named above in cooperation with the Federal, State, and local organizations listed on the last page of this report.

FEDERAL-STATE COOPERATIVE

SNOW SURVEYS AND IRRIGATION WATER FORECASTS

FOR

ARIZONA

Report Prepared

by

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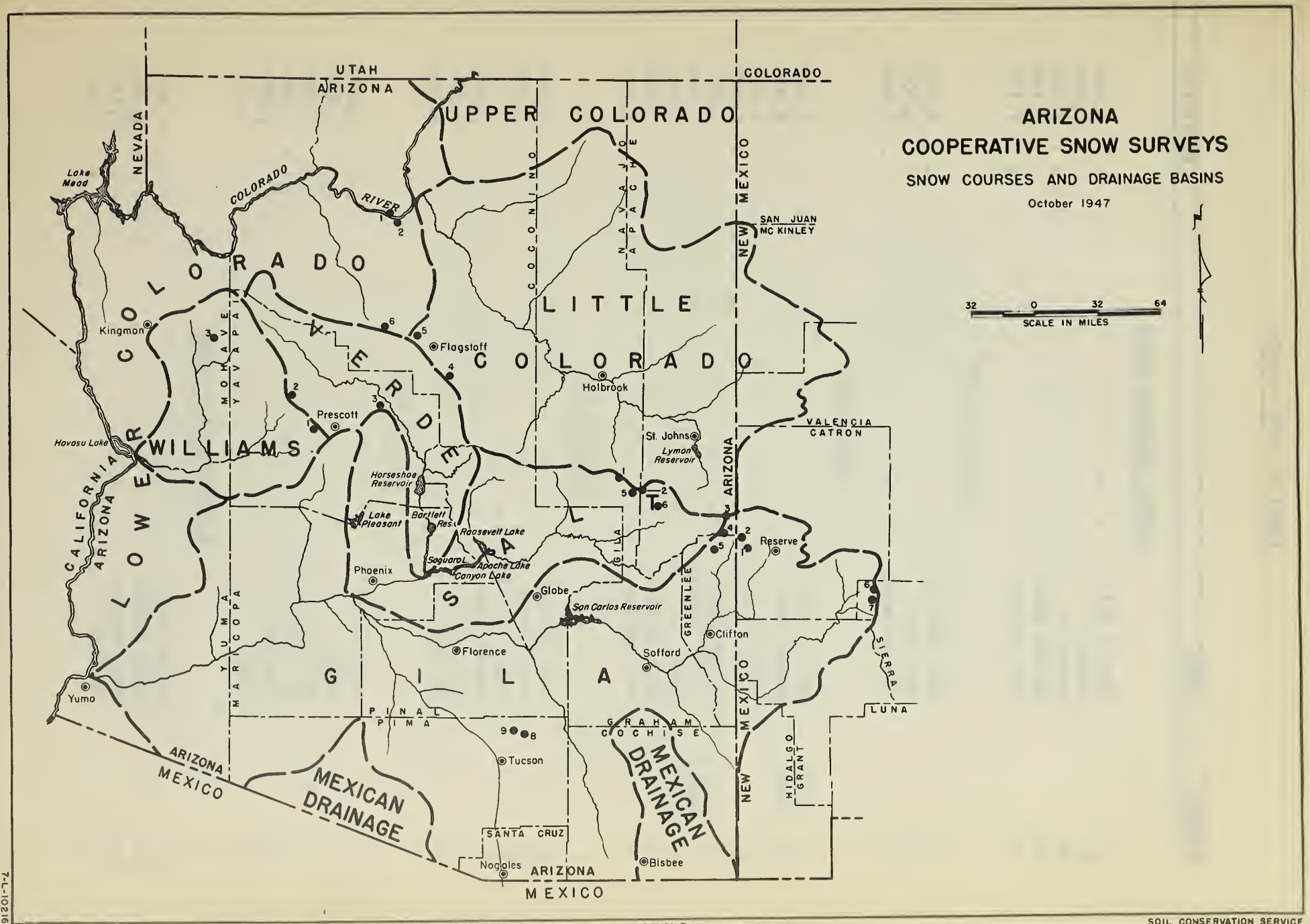
ARIZONA
COOPERATIVE SNOW SURVEYS
SNOW COURSES AND DRAINAGE BASINS
October 1947
32 0 32 64
SCALE IN MILES
UTAH
ARIZONA
COLORADO
NEVADA
NEW MEXICO
UPPER COLORADO
LITTLE COLORADO
LOWER COLORADO
GILA
VERDE
SALT
WILLIAMS
CALIFORNIA
ARIZONA
MOHAVE
YAVAPAI
YUMA
MARICOPA
PINAL
PIMA
GRAHAM
COCHISE
GREENLEE
SANTA CRUZ
COCONINO
NAVAJO
APACHE
SAN JUAN
MC KINLEY
VALENCIA
CATRON
SIERRA
LUNA
HIDALGO
GRANT
Lake Mead
COLORADO RIVER
Kingman
Flagstaff
Holbrook
Prescott
St. Johns
Lyman Reservoir
Havasu Lake
Horseshoe Reservoir
Lake Pleasant
Bartlett Res.
Roosevelt Lake
Saguaro L.
Apache Lake
Canyon Lake
Phoenix
Globe
San Carlos Reservoir
Reserve
Clifton
Sofford
Florence
Yumo
Tucson
Nogoles
Bisbee
MEXICAN DRAINAGE
MEXICAN DRAINAGE
ARIZONA
MEXICO
ARIZONA
MEXICO

INDEX TO SNOW COURSES

NUMBER		NAME	ELEVATION
		LITTLE COLORADO RIVER	
1.		Forest Dale	6,000
2.		McNary	7,200
3.		Nutrioso	8,500
4.		Mormon Lake	7,350
5.		Fort Valley	7,350
		WILLIAMS RIVER	
1.		Iron Springs	6,200
2.		Camp Wood	5,700
3.		Willow Ranch	5,000
		GILA RIVER	
1.	(N.M.)	Frisco Divide	8,000
2.	(N.M.)	State Line	8,000
3.		Nutrioso	8,500
4.		Coronado Trail	8,000
5.		Beaver Head	8,000
6.	(N.M.)	Taylor Creek	7,850
7.	(N.M.)	Inman	7,800
8.		Rose Canyon	7,300
9.		Bear Wallow	8,100
		VERDE RIVER	
1.		Iron Springs	6,200
2.		Camp Wood	5,700
3.		Mingus Mountain	7,100
4.		Mormon Lake	7,350
5.		Fort Valley	7,350
6.		Chalender	7,100
		SALT RIVER	
1.		Forest Dale	6,000
2.		McNary	7,200
3.		Nutrioso	8,500
4.		Coronado Trail	8,000
5.		Milk Ranch	7,000
6.		McKay	8,250
		LOWER COLORADO RIVER	
1.		Bright Angel	8,400
2.		Grand Canyon	7,500
5.		Fort Valley	7,350
6.		Chalender	7,100

WATER SUPPLY OUTLOOK

Arizona

February 15, 1948

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* * * * * * * * * * * * * * * * * * * * * * * * * *
* February 15, 1948 snow surveys indicate an      *
* improvement in the snow stored water at high-   *
* er elevations throughout the State. Low tem-    *
* peratures with good storms during the first     *
* part of February have placed a snow pack on     *
* most snow courses greater than last year and    *
* greater than average for this date.    The      *
* greater than average snow pack will have only   *
* a minor affect on the severe drought conditions *
* in the State.                                   *
* * * * * * * * * * * * * * * * * * * * * * * * * *
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Precipitation Throughout January, precipitation at the higher elevations of the State continued subnormal. Good snow storms during the first half of February resulted in normal or above normal precipitation for that period, but in no way made up for the subnormal cumulative since October 1947. Storms in the mountains and light rains in the valleys have improved soil moisture in both localities. Low temperatures with decreased evaporation is an additional factor contributing to improved soil moisture conditions.

Snow Cover The mountain snow cover has made a decided improvement during the past two weeks. The snow pack is greater on all snow courses measured. On Little Colorado watershed, water content of snow was about 140 percent of average, while on Gila and Salt it was 140 and 130 percent respectively. At higher elevations in eastern Arizona depths of three feet and better are reported.

Runoff With the exception of Little Colorado stream discharge of important rivers continues subnormal. During the month of January Gila River discharged slightly less than 60 percent of normal. This was but a slight improvement over the cumulative runoff since October 1947. Verde and Salt Rivers were 79 and 98 percent of normal respectively. With respect to runoff since October this meant very little change in Verde but a decided drop in percent of normal for Salt River. If storm conditions continue over the head-

waters of these streams an improvement in streamflow can be expected during this month, but up to the present time there has been very little runoff contributing to stock water ponds at the higher elevations.

Reservoir Storage Status of reservoir storage is the most important single factor in appraising irrigation water supplies in Arizona. As of February 15, storage in the seven largest reservoirs in the State totaled 236,000 acre-feet. The capacity and approximate average storage as of this date are 3,329,000 and 1,121,000 acre-feet respectively. Lake Pleasant with a capacity of 179,000 acre-feet contained less than 1,000 acre-feet of usable storage. San Carlos with a capacity of 1,200,000 acre-feet also contained less than 1,000 acre-feet. Salt River Reservoirs, with a total capacity of 1,771,000 acre-feet contained about 231,000 acre-feet, while Horseshoe and Bartlett on the Verde River with a combined capacity of 246,000 stored about 14,000 acre-feet.

TABLE I

ARIZONA SNOW SURVEYS FEBRUARY 15, 1948

LOCATION							SNOW COVER MEASUREMENTS					
								Water Content (Inches)			Past Record	
									Same Approx. date			
DRAINAGE BASIN and SNOW COURSE	Number	Sec.	Twp.	Rge.	Elev.	Date of Survey	Snow Depth (Inches)	1948	1947	1946	Years of Record	Av. Water Content (Inches)
LITTLE COLORADO RIVER												
Forest Dale	1	2	9N	21E	6000	2/17	5.3	1.7	0	2.5	9	0.7
McNary	2	14	8N	23E	7200	2/17	10.3	2.8	0.4	3.1	9	2.6
Nutrioso	3	23	6N	30E	8500	2/16	11.5	3.2	0.4	1.7	9	2.3
Mormon Lake	4	13	18N	8E	7350	2/15	26.9	6.8	1.7	New Course	2	4.3
Fort Valley	5	22	22N	6E	7350	2/16	4.9	1.0	0	" "	2	0.5
WILLIAMS RIVER												
Iron Springs	1	22	14N	3W	6200	2/12	5.0	0.5	0	0	3	0.2
Camp Wood	2	3	16N	6W	5700	2/15	5.8	0.5	0	0	3	0.2
Willow Ranch	3	16	21N	11W	5000	2/15	Trace		0	0	3	0
GILA RIVER												
Frisco Divide	1	31	6S	20W	8000	2/16	15.1	3.7	0	1.3	9	2.3
State Line	2	6	6S	21W	8000	2/16	14.7	3.2	0	1.5	9	3.0
Nutrioso	3	23	6N	30E	8500	2/16	11.5	3.2	0,4	1.7	9	2.3
Coronado Trail	4	26	5N	30E	8000	2/16	15.3	4.0	0.2	1.6	9	3.6
Beaver Head	5	13	4N	30E	8000		No Report		0	2.3	8	3.2
Taylor Creek	6	20	10S	10W	7850	2/17	5.3	1.8	0	1.1	7	0.5
Inman	7	6	11S	10W	7800	2/17	4.3	1.3	0	1.5	3	1.4
Rose Canyon	8	15	12S	16E	7300	2/16	5.5	1.5	New Snow Course			
Bear Wallow	9	6	12S	16E	8100	2/16	8.4	2.2	New Snow Course			

TABLE I

ARIZONA SNOW SURVEYS FEBRUARY 15, 1948

LOCATION								SNOW COVER MEASUREMENTS				
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									Same Approx. Date			
DRAINAGE BASIN and SNOW COURSE	Number	Sec.	Twp.	Rge.	Elev.	Date of Survey	Snow Depth (Inches)	1948	1947	1946	Years of Record	Av. Water Content (Inches)
VERDE RIVER												
Iron Springs	1	22	14N	3W	6200	2/12	5.0	0.5	0	0	3	0.2
Camp Wood	2	3	16N	6W	5700	2/15	5.8	0.5	0	0	3	0.2
Mingus Mountain	3	3	15N	2E	7100	2/15	5.4	0.5	0	New Course	2	0.3
Mormon Lake	4	13	18N	8E	7350	2/15	26.9	6.8	1.7	" "	2	4.3
Fort Valley	5	22	22N	6E	7350	2/16	4.9	1.0	0	" "	2	0.5
Chalender	6	27	22N	3E	7100	2/16	13.7	3.4	0.3	" "	2	1.9
SALT RIVER												
Forest Dale	1	2	9N	21E	6000	2/17	5.3	1.7	0	2.5	9	0.7
McNary	2	14	8N	23E	7200	2/17	10.3	2.8	0.4	3.1	9	2.6
Nutrioso	3	23	6N	30E	8500	2/16	11.5	3.2	0.4	1.7	9	2.3
Coronado Trail	4	26	5N	30E	8000	2/16	15.3	4.0	0.2	1.6	9	3.6
Milk Ranch	5	28	8N	23E	7000	2/17	6.1	1.6	0	1.6	8	1.2
LOWER COLORADO RIVER												
Bright Angel	1	34	33N	3E	8400	2/16	24.6	6.6	New Snow Course			
Grand Canyon	2	21	30N	4E	7500	2/15	8.9	2.2	" " "			
Fort Valley	5	22	22N	6E	7350	2/16	4.9	1.0	0	New Course	2	0.5
Chalender	6	27	22N	3E	7100	2/16	13.7	3.4	0.3	" "	2	1.9

TABLE 2

STATUS OF RESERVOIR STORAGE, February 15, 1948

BASIN and STREAM	RESERVOIR	USABLE CAPACITY (Thous. A.F.)	THOUSANDS ACRE FEET IN STORAGE About Feb.15				
			1948	1947	1946	1945	10-Yr.Avg. 1937-1946
Agua Fria	Lake Pleasant	179	1	3	4	7	23
Colorado	Lake Havasu	688	583	629	605	571	518[a]
Colorado	Lake Mead	27,935	19,448	16,922	18,561	19,086	20,194[a]
Gila	San Carlos	1,200	1	19	28	105	234
Little Colorado	Lyman	29	No Report	13	4	2	7[b]
Salt River	Salt River[c]	1,771	231	425	725	891	808
Verde	Bartlett	179	3	34	1	17	56[b]
Verde	Horseshoe	67	11	16	10	New Reservoir	

a - Average for years 1939 - 1946

b - Average for years 1941 - 1946

c - Includes Roosevelt, Apache, Saguaro, and Canyon Lakes

LIST OF SNOW SURVEYORS

SNOW COURSE	SURVEYOR
Forest Dale	W. Kindred & M. Woodward
McNary	W. Kindred & M. Woodward
Nutrioso	R. L. Diggs
Mormon Lake	M. F. Greaves
Fort Valley	Martin & Loska
Iron Springs	Ernest Saxby
Camp Wood	Mrs. C. C. Merritt
Willow Ranch	Tiny Miller
Frisco Divide	Dean M. Earl
Coronado Trail	R. L. Diggs
Beaver Head	Jes Burke
Taylor Creek	F. M. Inman
Inman	F. M. Inman
Mingus Mountain	Harold Linn
Chalender	V.J. Schroeder & E. Weil
Milk Ranch	W. Kindred & M. Woodward
State Line	Dean M. Earl
Rose Canyon	Wm. Hughes
Bear Wallow	Wm. Hughes
Bright Angel	S. Brown & J. Brown
Grand Canyon	W. J. Kennedy

The following organizations cooperate in the Arizona snow survey work:

STATE

Nevada Agricultural Experiment Station
Reno, Nevada

FEDERAL

Department of Agriculture
- Forest Service
  - Apache Forest
  - Coconino Forest
  - Coronado Forest
  - Gila Forest
  - Kaibab Forest
  - Prescott Forest
  - Southwestern Forest and Range Expt. Station, Fort Valley, Arizona
- Soil Conservation Service
  - Division of Irrigation

Department of Commerce
- Weather Bureau
  - Arizona Section

Department of Interior
- Bureau of Reclamation
  - Region III
- Geological Survey
  - Arizona District
- Indian Service
  - Fort Apache Reservation
- National Park Service
  - Grand Canyon National Park

Gila Water Commissioner
Safford, Arizona

IRRIGATION PROJECTS

Salt River Valley Water Users Association
Phoenix, Arizona

San Carlos Irrigation and Drainage District
Coolidge, Arizona

Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.